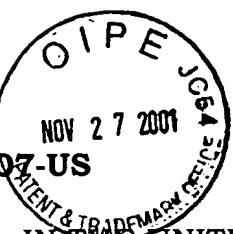


FURO007-US



**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE:

In re the Application of:

JOJI KASAI ET AL.

Art Unit: 2747 2644  
*12-11-01*

Serial No. 09/361,734

Examiner: Unknown  
*MS*

Filed: July 28, 1999

For: AUDIO SIGNAL PROCESSING CIRCUIT

Assistant Commissioner for Patents  
U.S. Patent and Trademark Office  
Washington, D.C. 20231

*#*  
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DEC 04 2001  
Technology Center 2600

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with the requirements of 37 CFR §§ 1.56, 1.96-1.97 and MPEP § 609, applicants, through their attorneys, hereby bring to the attention of the Examiner the references listed on the attached Form PTO-1449. A copy of each reference is enclosed for the convenience of the Examiner.

In compliance with the requirement for a concise explanation of the relevance of these foreign language documents, applicants note that Japanese Patent Publication for Opposition No. 49-48961 discloses the configuration of the phase shifters that produces random phase difference to make a presence feeling, as specified in column 3, and does not disclose the phase difference output from the phase-shifters PM<sub>L2</sub> and PM<sub>R2</sub>. Regarding a disclosure of the phase difference, only is it specified that when the shift

degrees of the phase shifters  $PM_{L1}$  and  $PM_{R1}$  are set up equally, not the presence feeling but the normal localization feeling of the front signals are obtained. Therefore, this document is characterized by the fact that the phase differences are produced at random by the phase-shifters. The present invention is characterized by the fact that the phase differences are at range of 140 degrees to 160 degrees.

Japanese Laid-open patent Application Hei 9-065497 discloses a FIR filter processing using a filter bank as a method for filter in a sound image localization device. However, this method is only a general configuration of a filter bank, there is no consideration of a characteristic of a shuffler filter. The present invention is characterized by the fact that an accuracy of the second filter is made higher than that of the first filter in a low frequency region, using a filter bank in the second filter. This is based on the characteristic of the shuffler type audio signal processing circuit. Therefore, this invention can provide a shuffler type audio signaling processing circuit having a simple structure and a high effect, without using a filter bank for the first filter.

Japanese Laid-open patent application Hei 8-182097 discloses a lattice filter in a filter setting to process monophonic signals for the sound image localization processing. And said lattice filter consists of Hybrid composition of IIR and FIR filter. Therefore, in this document, it is necessary for each filter to consist of Hybrid composition of IIR filter and FIR filter in order to produce good sound effect.

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Because of the characteristic that two lattice filters are required for one signal, and that the respective lattice filter must be made nearly equal in accuracy, the respective lattice filter must be comprised of Hybrid structuring of IIR filter and FIR filter in order to be highly effective.

The present invention is, considering the characteristics of the shuffler type filter in the virtual image localization device, characterized by the accuracy of the second filter higher than that of the first filter, wherein the second filter is composed of a parallel connection of FIR filter and secondary IIR filter. Consequently, it is possible of providing a shuffler type audio signal processing circuit having a simple structure and having a high accuracy without a parallel connection of FIR filter and secondary IIR filter in the first filter.

These references are cited in the Office Action to the relevant Japanese cases Hei10-217292 and Hei 10-218218 and are believed to be relevant for at least that reason.

Should a first action on the merits have been issued on the same day or before this Information Disclosure Statement is filed, please accept this Information Disclosure Statement under Rule 97(c) and charge the requisite Rule 17(p) fee to our Deposit Account No. 03-3836, under Order No. FUR0007-US and proceed to consider this Information Disclosure Statement.

The above information is presented so that the Patent and Trademark Office may, in the first instance, determine any materiality thereof to the

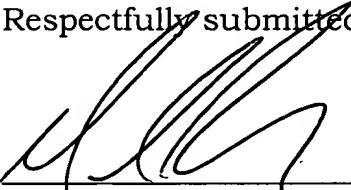
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expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

Respectfully submitted,



Michael D. Bednarek  
Registration No. 32,329

Dated: **November 27, 2001**

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Document #: 1159728 v.1

INFORMATION DISCLOSURE CITATION <i>(Use several sheets if necessary)</i>				Docket Number (Optional) FUR0007-US	Application Number 09/361,734	
				Applicant(s) Kasai et al.		
				Filing Date July 28, 1999	Group Art Unit 2747	
U.S. PATENT DOCUMENTS						
*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS
FILING DATE IF APPROPRIATE						
FOREIGN PATENT DOCUMENTS						
REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation
						YES
	No. 49/48961	12/1974	Japan			<input checked="" type="checkbox"/>
	Hei 09-065497	07/1997	Japan			<input checked="" type="checkbox"/>
	Hei 08-182097	12/1996	Japan			<input checked="" type="checkbox"/>
OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>						
EXAMINER				DATE CONSIDERED		